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**Q2. An employee of a company is travelling to either England, Italy, or Spain. The employee can travel to only one country. There is a 50% of chance the employee will go to England and a 20% chance to Italy.**

**Assume the chances of contracting COVID to be proportional to the prevalence of the disease in each country, given in the table below. For example,**

**the chance of contracting COVID in England is 1200/1,000,000.**

**the chance of contracting COVID in Italy is 1500/1,000,000.**

**the chance of contracting COVID in Spain is 1600/1,000,000.**

1. **What are the chances that the employee will contract COVID while travelling**

P (travelling to England) = 50% = 0.5

P (travelling to Italy) = 20% = 0.2

P (travelling to Spain) = 30% = 0.3

P (chances of contracting COVID in England) = 1200 / 1,000,000

P (chances of contracting COVID in Italy) = 1500 / 1,000,000

P (chances of contracting COVID in Spain) = 1600 / 1,000,000

P (employee will contract COVID while travelling) =

P (chances of contracting COVID in England / travelling to England) +

P (chances of contracting COVID in Italy / travelling to Italy) +

P (chances of contracting COVID in England / travelling to England)

= (1200 / 1,000,000) \*(0.5) + (1500 / 1,000,000) \*(0.2) + (1600 / 1,000,000) \*(0.3)

= 0.0006 + 0.0003 + 0.00048

= 0.00138

= 0.138%

Chances of traveler contracting COVID is 0.138% while travelling.

1. **Assume that the employee has traveled to Europe and contracted COVID, what is the probability that he/she traveled to England?**

P (Traveled to England/ employee has traveled to Europe and contracted COVID)

= P (chances of contracting COVID in England / travelling to England) /

P (chances of contracting COVID in Europe)

= 0.0006 / 0.00138

= 0.4347

= 43.47%